

performed upon each use of the authentication device or may occur at periodic intervals using recalibration data stored up during the period.

In another embodiment, over time, every time a person's waveform is measured and the waveform is authenticated, the values of the particular waveform are stored as part of an ongoing calibration process. The values may be incorporated into the existing authenticating set of marker measurements, but given little weight. Over time, if the authenticated waveform continues to be slightly, but consistently different from the actual wave form, small incremental changes to the overall authentication set result. Ongoing calibration will allow the device to continue to be used even though the authorized user's body is changing. For example, if a user's arteries begin hardening, the template would slowly adapt to situations over time, after a thousand or a hundred different ongoing authenticated waveforms are averaged into the template using a weighted average. If a user undergoes a dramatic, sudden change in body function, such as surgery or some form of aggressive therapy, total reprogramming of the authentication set or template may be required.

What is claimed is:

1. A method for calibrating a biometric authentication device over time comprising the steps of:

obtaining an authenticating biometric value from an actual biometric measurement;

weighting the authenticating biometric value, and

integrating the weighted authenticating biometric value into an authenticating template.

2. The method of claim 1 wherein the step of obtaining an authenticated biometric value comprises determining that a measured biometric value falls within a predetermined range of biometric values.

5 3. The method of claim 2 wherein the integration of the weighted value is accomplished by averaging the weighted value into the authenticating range of values.

4. The method of claim 3 wherein the step of averaging the weighted value further comprises multiplying the authenticating measured value by a multiplier.

10 5. The method of claim 1 wherein the step of weighting the authenticating biometric value allows the biometric value to be adaptably weighted.

15 6. The method of claim 1 wherein biometric value is adaptably weighted based upon consistent differences in authenticated measured biometric values.

7. The method of claim 1 wherein biometric value is adaptably weighted based upon trends in measured authenticating biometric values.

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8. The method of claim 1 wherein biometric value is adaptably weighted based on the frequency of use of the biometric authentication device.

9. The method of claim 1 wherein biometric value is adaptably weighted based on the number of uses of the biometric authentication device.

10. The method of claim 1 wherein the authenticated biometric values are obtained by measuring histological biometric markers.

11. The method of claim 1 wherein the authenticating biometric values are obtained measuring a physiological biometric marker.

12. The method of claim 1 wherein the authenticated biometric values are weighted to accommodate for known changes in a biometric marker.

13. The method of claim 1 wherein the biometric values are univariate values.

14. The method of claim 1 wherein the biometric values are multivariate values.

15. The method of claim 1 wherein the biometric marker being measured is an internal biometric marker.

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16. A device employing a biometric access system, said access system being adaptable to changes in a user's biometric over time, said device adapting to said changes by using the steps of:

obtaining an authenticating biometric value from an actual biometric measurement;

weighting the authenticating biometric value,

integrating the weighted authenticating biometric value into an authenticating template.

17. The method of claim 16 wherein the step of obtaining an authenticated biometric value comprises determining that a measured biometric value falls within a predetermined range of biometric values.

18. The method of claim 17 wherein the integration of the weighted value is accomplished by averaging the weighted value into the authenticating range of values.

19. The method of claim 18 wherein the step of averaging the weighted value further comprises multiplying the authenticating measured value by a multiplier.

20. The method of claim 16 wherein the biometric marker being measured is an internal biometric marker.

21. The method of claim 16 wherein the step of weighting the authenticating biometric value allows the biometric value to be adaptably weighted.

22. The method of claim 16 wherein biometric value is adaptably weighted based upon consistent differences in authenticated measured biometric values.

23. The method of claim 16 wherein biometric value is adaptably weighted based upon trends in measured authenticating biometric values.

24. The method of claim 16 wherein biometric value is adaptably weighted based on the frequency of use of the biometric authentication device.

25. The method of claim 16 wherein biometric value is adaptably weighted based on the number of uses of the biometric authentication device.

26. The method of claim 16 wherein the authenticated biometric values are obtained by measuring histological biometric markers.

27. The method of claim 16 wherein the authenticating biometric values are obtained measuring a physiological biometric marker.

28. The method of claim 16 wherein the authenticated biometric values are weighted to accommodate for known changes in a biometric marker.

29. The method of claim 16 wherein the biometric values are univariate values.

30. The method of claim 16 wherein the biometric values are multivariate values.

31. A computer readable medium containing instructions for controlling calibration of a biometric marker for use in a biometric authentication device, by:

obtaining an authenticating biometric value from an actual biometric measurement;

weighting the authenticating biometric value, and

integrating the weighted authenticating biometric value into an authenticating template.

32. The method of claim 31 wherein the step of obtaining an authenticated biometric value comprises determining that a measured biometric value falls within a predetermined range of biometric values.

33. The method of claim 32 wherein the integration of the weighted value is accomplished by averaging the weighted value into the authenticating range of values.

34. The method of claim 33 wherein the step of averaging the weighted value further comprises multiplying the authenticating measured value by a multiplier.

35. The method of claim 31 wherein the biometric marker being measured is an internal biometric marker.

36. The method of claim 31 wherein the step of weighting the authenticating biometric value allows the biometric value to be adaptably weighted.

37. The method of claim 31 wherein biometric value is adaptably weighted based upon consistent differences in authenticated measured biometric values.

38. The method of claim 31 wherein biometric value is adaptably weighted based upon trends in measured authenticating biometric values.

39. The method of claim 31 wherein biometric value is adaptably weighted based on the frequency of use of the biometric authentication device.

40. The method of claim 31 wherein biometric value is adaptably weighted based on the number of uses of the biometric authentication device.

41. The method of claim 31 wherein the authenticated biometric values are obtained by measuring histological biometric markers.

42. The method of claim 31 wherein the authenticating biometric values are obtained measuring a physiological biometric marker.

43. The method of claim 31 wherein the authenticated biometric values are weighted to accommodate for known changes in a biometric marker.

44. The method of claim 31 wherein the biometric values are univariate values.

45. The method of claim 31 wherein the biometric values are multivariate values.